

Claims

1. Apparatus, comprising:

5 a translatory position monitor, responsive to a translatory position of a head, for providing a translatory position signal;
an eye monitor, responsive to a monitored eye in said head for providing a monitored eye signal;
a signal processor, responsive to the monitored eye signal and the
10 translatory position signal, for providing a processed signal referenced to a vehicle coordinate system; and
a control, responsive to the processed signal referenced to the vehicle coordinate system, for providing a control signal.

15 2. The apparatus of claim 1, further comprising a head attitude monitor, responsive to attitude of the head in the vehicle coordinate system, for providing a head attitude signal, wherein the signal processor is also responsive to the head attitude signal for providing the processed signal referenced to the vehicle coordinate system.

20 3. The apparatus of claim 2, wherein said apparatus further comprises a vehicle position monitor, responsive to position of said vehicle with respect to a reference coordinate system, for providing a vehicle position signal, wherein the signal processor is also responsive to the vehicle position signal for providing the processed signal.

25 4. The apparatus of claim 3, wherein said apparatus further comprises a vehicle attitude monitor, responsive to vehicle attitude in the reference coordinate system, for providing a vehicle attitude signal, wherein the signal processor is also responsive to the vehicle attitude signal for providing the processed signal.

5. A method for monitoring an eye, comprising the steps of:
sensing translatory position of a head with respect to a vehicle coordinate
system for providing a sensed translatory head position signal;
monitoring an eye in said head for providing a monitored eye signal; and
5 providing a control signal in response to the monitored eye signal and the
sensed translatory head position signal.

10 6. The method of claim 5, further comprising the step of sensing attitude of
said head for providing a sensed head attitude signal, and providing said control signal
also in response to said sensed head attitude signal.

15 7. The method of claim 6, wherein said head is in a vehicle associated with
said vehicle coordinate system, and wherein said method further comprises the step of
sensing translatory position of said vehicle with respect to a reference coordinate system,
for providing a vehicle translatory position signal, for providing said control signal in
15 response also to said vehicle translatory position signal.

20 8. The method of claim 7, further comprising the step of sensing attitude of
said vehicle in the reference coordinate system for providing a vehicle attitude signal, for
providing said control signal in response also to said vehicle attitude signal.

9. Apparatus, comprising:
means for sensing visual axes of a pair of eyes in a head for providing
sensed eye direction signals;
25 means for sensing translatory position of the head with respect to a vehicle
coordinate system for providing a head translatory position signal;
means responsive to the sensed eye direction signals and the head
translatory position signal, for providing an eyepoint signal indicative of a conjunction at
a point in space of said visual axes; and
30 means responsive to the eyepoint signal for providing a control signal.

10. The apparatus of claim 9, further comprising means for sensing attitude of the head for providing a head attitude signal and wherein the means responsive to the head translatory position signal and the sensed eye direction signals is also responsive to the head attitude signal for providing the eyepoint signal.

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11. Apparatus, comprising:

a signal processor, responsive to a head translatory position signal indicative of a translatory position associated with a head translating with respect to a vehicle coordinate system and responsive to an eye direction signal indicative of direction of an eye in said head, for providing the eye direction signal referenced to said vehicle coordinate system; and

10 a control, responsive to the eye direction signal referenced to the vehicle coordinate system, for providing a control signal.

15 12. The apparatus of claim 11, further comprising an eye monitor, responsive to said direction of said eye, for providing said eye direction signal.

13. The apparatus of claim 12, further comprising a head translatory position monitor, responsive to said translatory position associated with said head translating with respect to said vehicle coordinate system, for providing said head translatory position signal.

20 14. The apparatus of claim 11, further comprising a head translatory position monitor, responsive to said translatory position associated with said head translating with respect to said vehicle coordinate system, for providing said head translatory position signal.

25 15. The apparatus of claim 11, further comprising a head attitude monitor, responsive to attitude of the associated head in the vehicle coordinate system, for providing a head attitude signal, wherein the signal processor is responsive to the head attitude signal for providing the eye direction signal referenced to the vehicle coordinate

system and wherein the control is responsive to the eye direction signal referenced to the vehicle coordinate system for providing the control signal.

16. The apparatus of claim 15, further comprising a vehicle position monitor,
5 responsive to translatory position of said vehicle in the a reference coordinate system, for providing a vehicle translatory position signal, wherein the signal processor is responsive to the vehicle translatory position signal for providing the eye direction signal referenced to the reference coordinate system and wherein the control is responsive to the eye direction signal referenced to the reference coordinate system for providing the control
10 signal.

17. The apparatus of claim 16, further comprising a vehicle attitude monitor, responsive to vehicle attitude in the reference coordinate system, for providing a vehicle attitude signal, wherein the signal processor is responsive to the vehicle attitude signal for providing the eye direction signal referenced to the reference coordinate system and wherein the control is responsive to the eye direction signal referenced to the reference coordinate system for providing the control signal.
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18. Method for monitoring an eye in a head attached to a body, comprising the
20 steps of

providing, in response to a head translatory position signal indicative of a translatory position associated with said head translating with respect to a vehicle coordinate system and in response to an eye direction signal indicative of a direction of said eye in said head, an eye direction signal referenced to said vehicle coordinate
25 system, and

providing, in response to the eye direction signal referenced to the vehicle coordinate system, a control signal.

19. The method of claim 18, further comprising the step of sensing said
30 translatory position associated with said head translating with respect to said vehicle coordinate system, for providing said head translatory position signal.

20. The method of claim 19, further comprising the step of sensing said direction of said eye in said head, for providing said eye direction signal.

5 21. The method of claim 18, further comprising the step of sensing said direction of said eye in said head, for providing said eye direction signal.

10 22. The method of claim 18, wherein said step of providing the control signal is also in response to a head attitude signal indicative of attitude of said head with respect to said vehicle coordinate system.

15 23. The method of claim 22, wherein said step of providing the control signal is also in response to a vehicle translatory position signal indicative of translatory position of a vehicle associated with said vehicle coordinate system with respect to a reference coordinate system.

20 24. The method of claim 23, wherein said step of providing the control signal is also in response to a vehicle attitude signal indicative of attitude of said vehicle with respect to said reference coordinate system.

25 25. Apparatus, comprising:

one or more monitors, responsive to translations in position of a human head attached to a body positioned in a vehicle, attitudinal changes of said head and eye movements of at least one eye in said head, for providing one or more monitored signals indicative of said head translations, said attitudinal changes and said eye movements; and

a computer, responsive to said one or more monitored signals indicative of said head translations, said head attitudinal changes and said eye movements, for providing a processed signal indicative of said eye movements.

30 26. The apparatus of claim 25, further comprising a vehicle monitor, responsive to positional translations of said vehicle in a reference coordinate system, for

providing a monitored signal indicative of said positional translations of said vehicle, wherein said computer is responsive to said monitored signal indicative of said positional translations of said vehicle for providing said processed signal indicative of said eye movements with respect to said reference coordinate system.

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27. The apparatus of claim 26, further comprising a vehicle attitude monitor, responsive to attitude of said vehicle in said reference coordinate system, for providing a monitored vehicle attitude signal indicative of said attitude of said vehicle, wherein said computer is responsive to said monitored vehicle attitude signal for providing said processed signal indicative of said eye movements with respect to said reference coordinate system.

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